FACILITY MANAGEMENT

DOCUMENT

PART- I

HOSPITAL BUILDING

1.0 Ground Floor:

1.1 Following are the list of facilities on the ground floor of hospital building:

- Outpatient pharmacy
- Main reception
- Main lobby waiting area
- Emergency Medicine Department
- Doctor's Room, ER.
- Ambulance control
- Dialysis
- Out-Patient sample collection area
- Waiting area
- TMT
- ECHO/ECG
- Ultrasound
- Emergency Operation Theatre
- Recovery room
- Security Office/ CCTV Room
- X-ray Unit
- MRI Unit
- CT Scan Unit
- Equipment Room

- CR Room
- Console Room
- Change Room
- Radiology waiting area
- Report collection area

1.2 The ground floor of the hospital building is provided with the following systems:

- Colour coded waste disposal bins are available in each area for segregation of bio - medical waste.
- An elevator aid in the commuting process of staff and patients.
- Fire extinguishers are kept in each area for the fire safety.
- Smoke detectors are installed for fire safety.
- All the doors are provided with locks for the safety of facility.
- Hazardous materials are stored in separate cabinets.
- The fire exits are available for exiting from the facility.
- The personal protective equipment (PPE), is also provided for the safety of employees in case of major hazardous material spill.
- Power panel board is accessible in case of any electrical problem.
- Adequate power points are provided for ensuring electric supply.
- Safe working conditions are ensured through good lighting and storage facilities.
- Public address system aids in informing staff about codes etc.
- Communication system is maintained for staff and patients through telephone system.

- Public toilets are easily accessible to the patients and visitors.

2.0 First Floor

2.1 Following are the list of facilities on the first floor of the hospital building:

- Receptions (2) for each wing
- OPD- Consultation rooms
- Treatment rooms (2) for each wing
- Urodynamics Unit
- Administration Office
- Administrator Office
- Outpatient billing
- Inpatient billing
- Insurance Desk
- Lab Services
- Conference Hall

2.2 The first floor of main hospital building is provided with the following systems:

- Safe drinking water facility is easily accessible in the first floor of main hospital building.
- Colour coded waste disposal bins are available in each area for segregation of bio - medical waste.
- An elevator aid in the commuting process of staff and patients.
- Air conditioning facility is available in the first floor.
- All the doors are provided with locks for the safety of facility

- Fire extinguishers are kept in each area for the fire safety.
- Smoke detectors are installed for fire safety.
- Sprinklers are installed for fire safety on first floor.
- The personal protective equipment (PPE) is also provided for the safety of employees in case of major hazardous material spill.
- Power panel board is accessible in case of any electrical problem.
- Adequate power points are provided for ensuring electric supply.
- Safe working conditions are ensured through good lighting and storage facilities.
- Public address system aids in informing staff about codes etc.
- Monitoring of the facility is expressed by closed circuit television.
- Communication system is maintained for staff and patients through telephone system.
- Public toilets are easily accessible to the patients and visitors.

3.0 Second Floor

3.1 Following are the list of facilities on the second floor of main hospital building:

- Nursing Station
- Patient Rooms- Semi-Private, 202-214
- General ward 1-30
- Electrical Power Room
- House Keeping Room
- Dept. of Operations Office

3.2 The second floor of main hospital building is provided with the following systems:

- Safe drinking water facility is easily accessible in the second floor of main hospital building.
- Colour coded waste disposal bins are available in each room for segregation of bio medical waste.
- An elevator aid in the commuting process of staff and patients.
- Air conditioning facility is available in the second floor.
- Fire extinguishers are kept in each area for the fire safety.
- Smoke detectors are installed for fire safety.
- Fire Doors are installed on the fire exit at nursing station for fire safety.
- Hazardous materials are stored separately in HAZMAT Boxes.
- The fire exit ramp and stairway are available with proper signage for exiting from the facility.
- The personal protective equipment (PPE) is also provided for the safety of employees in case of major hazardous material spill.
- Power panel board is accessible in case of any electrical problem.
- Adequate power points are provided for ensuring electric supply.
- Safe working conditions are ensured through good lighting and storage facilities.
- Emergency call bells are present at the bedside in patient rooms and wards.
- Public address system aids in informing staff about codes etc.
- Communication system is maintained for staff and patients through telephone system.

4.0 Third Floor

4.1 Following are the list of facilities on the third floor of the hospital building:

- Nursing Station(2) for each wing
- Patient Rooms- Private, 301-309,319-328
- Patient Rooms- Deluxe, 311-318
- Resident Doctor Rooms
- Electrical Power Room
- House Keeping Room
- Dept. Of Nursing
- Gastrentology/ Endoscopy

4.2 The third floor of the hospital building is provided with the following systems:

- Safe drinking water facility is easily accessible in the third floor of main hospital building.
- Colour coded waste disposal bins are available in each room for segregation of bio medical waste.
- An elevator aid in the commuting process of staff and patients.
- Fire extinguishers are kept in each area for the fire safety.
- Smoke detectors are installed for fire safety.
- Fire Doors are installed on the fire exit at nursing station for fire safety.
- Hazardous materials are stored separately in HAZMAT Boxes.
- The fire exit stairway with proper signage is available for exiting from the facility.
- The personal protective equipment (PPE) is also provided for the safety of employees in case of major hazardous material spill.
- Power panel board is accessible in case of any electrical problem.
- Adequate power points are provided for ensuring electric supply.

- Safe working conditions are ensured through good lighting and storage facilities.
- Emergency call bells are present at the bedside in patient rooms and wards.
- Public Address System aids in informing staff about codes etc.
- Monitoring of the facility is expressed by closed circuit television.
- Communication system is maintained for staff and patients through telephone system.

5.0 Fourth Floor

5.1 Following are the list of facilities on the fourth floor of the hospital building:

- Pre Anesthetic Check room/ICU Counseling
- Operation theatre complex
    a. Operation theatre reception
    b. Recovery unit
    c. Operating theatres
    d. Sterile Store
    e. OT stores
    f. OT pharmacy
    g. Male Doctors change room
    h. Female Doctor change room
    i. Nurses change room
    j. Patient preparation /Male Change Room
    k. Instrument wash area
- Digital, Flat panel Catheterization Lab
- Cardiac Intensive Care Unit

- Cardio-Thoracic post Unit
- General Intensive Care Unit
- Recovery Unit

5.2 The fourth floor of the hospital building is provided with the following systems:

- Colour coded waste disposal bins are available in each area for segregation of bio medical waste.
- An elevator aid in the commuting process of staff and patients.
- Fire extinguishers are kept in each area for the fire safety.
- Smoke detectors are installed for fire safety.
- Fire Doors are installed on the fire exit at nursing station for fire safety.
- Hazardous materials are stored separately in HAZMAT Boxes.
- The fire exit stairway with proper signage is available for exiting from the facility.
- The personal protective equipment (PPE) is also provided for the safety of employees in case of major hazardous material spill.
- Power panel board is accessible in case of any electrical problem.
- Adequate power points are provided for ensuring electric supply.
- Safe working conditions are ensured through good lighting and storage facilities.
- Emergency call bells are present at the bedside in patient rooms and wards.
- Public Address System aids in informing staff about codes etc.
- Monitoring of the facility is expressed by closed circuit television.
- Communication system is maintained for staff and patients through telephone system.

6.0 Fifth Floor

6.1 Following are the list of facilities on the fifth floor of the hospital building:

- Kitchen
- Dining Hall
- F&B Store

6.2 The fifth floor of the hospital building is provided with the following systems:

- Safe drinking water facility is easily accessible in the fifth floor.
- An elevator aid in the commuting process of staff and patients.
- Fire extinguishers are kept in each area for the fire safety.
- Smoke detectors are installed for fire safety.
- Fire Doors are installed on the fire exit at nursing station for fire safety.
- The fire exit stairway with proper signage is available for exiting from the facility.
- The personal protective equipment (PPE) is also provided for the safety of employees in case of major hazardous material spill.
- Power panel board is accessible in case of any electrical problem.
- Adequate power points are provided for ensuring electric supply.
- Safe working conditions are ensured through good lighting and storage facilities.
- Public Address System aids in informing staff about codes etc.
- Monitoring of the facility is expressed by closed circuit television.
- Communication system is maintained for staff and patients through telephone system.

7.0 Sixth Floor

7.1 Following are the list of facilities on the sixth floor of the hospital building:

- Biomedical Dept
- R.O Water plant
- Lift Room

- Water Storage Tanks
- Ac Plant
- Lift Room

7.2 The sixth floor of the hospital building is provided with the following systems:

- Fire extinguishers are kept in each area for the fire safety.
- Smoke detectors are installed for fire safety.
- Fire Doors are installed on the fire exit at nursing station for fire safety.
- Hazardous materials are stored separately in HAZMAT Boxes.
- The fire exit stairway with proper signage is available for exiting from the facility.
- The personal protective equipment (PPE) is also provided for the safety of employees in case of major hazardous material spill.
- Power panel board is accessible in case of any electrical problem.
- Adequate power points are provided for ensuring electric supply.
- Safe working conditions are ensured through good lighting and storage facilities.
- Public Address System aids in informing staff about codes etc.
- Monitoring of the facility is expressed by closed circuit television.
- Communication system is maintained for staff and patients through telephone system.

8.0 Cellar B1

8.1 Following are the list of facilities in the cellar of the hospital building:

- CSSD
- Medical Records Department
- Telephone Board

- Main Stores
- Time Office
- Engineering/Maintenance Department
- Central Gas Supply Bank
- Mortuary
- Generator
- UPS Room
- Sewerage Treatment Plant
- Parking Area
- Electrical Panel Room
- Fire Panel Room

8.2 Cellar of the hospital building is provided with the following systems:

- An elevator aid in the commuting process of staff and patients.
- Fire extinguishers are kept in each area for the fire safety.
- Smoke detectors are installed for fire safety.
- The personal protective equipment (PPE) is also provided for the safety of employees in case of major hazardous material spill.
- Adequate power points are provided for ensuring electric supply.
- Safe working conditions are ensured through good lighting and storage facilities.
- Public Address System aids in informing staff about codes etc.
- Monitoring of the facility is expressed by closed circuit television.
- Communication system is maintained for staff and patients through telephone system.

Cellar B

8.1 Following are the list of facilities in the cellar of the hospital building:

- Hospital Waste Final Collection Point
- Housekeeping Store
- Parking Area

- Fire extinguishers are kept in each area for the fire safety.
- Smoke detectors are installed for fire safety.
- The personal protective equipment (PPE) is also provided for the safety of employees in case of major hazardous material spill.
- Adequate power points are provided for ensuring electric supply.
- Safe working conditions are ensured through good lighting and storage facilities.

FACILITY MANAGEMENT DOCUMENT

PART- II

FMS-II

[A] LAWS AND REGULATIONS

Various regulatory agencies involved for granting licenses to operate are as follows:

- Andhra Pradesh Pollution Control Board issues license under Rule 8 of the Bio –Medical Waste (Management & Handling) Rules 1998 for Handling Bio-Medical Waste.
- Andhra Pradesh Pollution Control Board issues license under Prevention & Control of pollution, Act 1974 under sec 25 for Air & Water pollution.
- Government of Andhra Pradesh, Electrical Inspectorate issues approval for High Tension Electrical Installation under Indian Electricity Act 1910.

[B] LIST OF STATUTORY COMPLIANCE

Following are the list of statutory compliance by Apollo Hospitals, Hyderabad in accordance with the various applicable laws and regulations:

- Apollo Hospital, Secunderabad has the authorization for generation, segregation, and safe disposal of Bio- Medical Waste under the Bio –Medical Waste (Management & Handling) Rules 1998, since and the renewed license for the period of three year from 09.09.2011 to 30.09.2013
- The sewerage water plant of Apollo hospitals, Secunderabad is under the annual maintenance contract with Vision Enviro Engineers and the company has the authorization for the treatment and disposal of effluent water under the Prevention and Control of Pollution, Act 1974 of Andhra Pradesh Pollution Control Board.

- Apollo Hospital, Secunderabad has authorization for High Tension Electrical Installation since30th March'2012 under the Indian Electricity Rules, 2003 issued by chief electrical inspector to government.

ENGINEERING DEPARTMENT

SCOPE DOCUMENT

PART- III

Engineering and Maintenance Department

1.0 Overview of Engineering and Maintenance Department

Engineering and maintenance department is responsible for ensuring safe and economical operation and maintenance of hospital facilities and equipment.

The department performs a wide range of functions. It is responsible for the operation of all equipment, machinery and distribution lines, and preventive maintenance and repair. Specifically, the department performs the following functions:

1.1 A/C plant operations

1.2 Operations of Central gas supply system

1.3 Building operations and maintenance

1.5 Mechanical and electrical maintenance

1.6 Preventive maintenance

1.7 Elevator, lift maintenance

1.8 Plumbing water supply and sanitary system

1.9 Contracted services

1.10 Carpentry, painting

1.11 Electrical system including equipment, machinery, power lighting, emergency generators, UPS and refrigerator maintenance

1.12 Minor plant alterations, renovation and repairs

1.13 Condemnation and disposal

2.0 Objective

Objective of the Maintenance Department is to take care of the patient indirectly by seeing that the patients are more comfortable during their treatment thereby enabling them to recover quickly.

4.0 Maintenance Department Staffing

Manager: Mr. P. Srinivasulu Reddy **Engineers:** 1. Mr.Srininvas.D 2. Mr. R.V.N. Prasad Reddy.

S.no	*Name of the Plant*	*Name of the Employee*	*No Of Employees*
1.	A/C Plant	Mr. Rajesh	1
2	CGSS Plant	Mr.Satyanarayana Reddy	1
6	Electrical Sub-station	Mr.Anajeneyulu Omkar.Kumar Shabir Ali	03
7.	Plumbing	Aravind	01
8	Lifts (Main Block)	Operator: Mr. Ramana Reddy	01

Complaint Desk/ Preventive maintenance/ daily rounds/ general mechanical and carpentry maintenance will be attended by any employee in the department.

5.0 JOB RESPONSIBILITIES

Supervisor (General)

The Supervisor is responsible for fixing targets for the department. Planning, scheduling and controlling the jobs to be done by the department and coordinating with other departments in achieving the above goals. He is also responsible for major renovations in the hospital like

building and expanding the existing areas. Looking into, negotiating and approving the technical aspects of the new equipments and also responsible for approving installations and is responsible for day-to-day activities of the department. He is also responsible for organizing the major and minor breakdowns and preventive maintenances of the various plants with the help of engineers.

Electrician

Is responsible for proper functioning of generators, panel boards in his shift and preventive maintenance of power and lighting distribution boards and will attend general break downs.

Plant Operator

Is responsible for proper functioning of the air-conditioning plant and the related equipment like Window A/C, AHUs, FCUs, Split units, and Package units.

Plumber

Plumber is responsible for proper functioning of pumps, supply of water to all areas of the hospital. To check tank levels for routine fill and quantity of water being received from outside suppliers.

CGSS Operator

CGSS operator is responsible for seeing that there is a constant supply of medical air, vacuum, oxygen and nitrous oxide to operation theatres as well as to other areas as and when required. To replace empty cylinders on time.

Lift Operator

Lift operator has to ensure continuous and pleasant service to patients through perfect operating of the lifts and ensuring the lift in presentable status functionally and aesthetically.

Preventive Maintenance Protocols for the Equipments of Maintenance and Engineering Services

- **Central Plant (A/C)**
- **Package Unit (A/C)**
- **Air Drier**
- **Vacuum Compressor**
- **Air Compressors**
- **Batteries**
- **Electrical Generator**
- **Electrical Panels (Pump A/C)**
- **Power Distribution Boards**
- **Water Supply Pumps**
- **Air Handling Units**

DAILY CHECK FOR CENTRAL PLANT (A/C)

- Check Leaks with Soap Solution
- Check Oil Level
- Check Gas and Oil Pressure
- Check Chiller Inlet and Outlet Pressure and Temperature
- Check Condenser Inlet and Outlet Pressure and Temperature
- Check All Operating Valves Position

DAILY CHECK FOR PACKAGE UNIT (A/C)

- Switch On the Unit
- Check the Air Filter
- Check for Any Abnormality in Sound from Motor & Blower Assembly
- Check V-Belts

DAILY CHECK FOR AIR DRIER

- Drain water from compressed air storage tank every one hour
- Check the solenoid valve
- Check the inlet and outlet valves

MONTHLY CHECK FOR VACCUM COMPRESSOR

- Switch off the Pump
- Clean the Pump
- Check the Motor Terminal
- Tighten Bolts and Nuts
- Check Oil Level
- Check Pressure Switch and Pressure Gauge
- Check V - Belts and Change If Necessary
- Switch On the Pump

MONTHLY CHECK FOR AIR COMPRESSORS

- Switch Off the Compressor
- Remove the Air Inlet Filter and Clean It
- Check Oil Level, Fill If Necessary
- Check the Cooling Water Flow
- Check All Electrical Controls
- Check All Pressure Gauges

- Check V-Belts and Replace If Necessary
- Check for Proper Functioning Of Loading and Unloading
- Tighten Bolts and Nuts in the Base

DAILY CHECK FOR BATTERIES

- Check Level of Distilled Water in Batteries
- Check the Connection between Battery Terminals and Generator Set
- Clean the Batteries for Distilled Water Spillage, If Any

DAILY CHECK FOR ELECTRICAL GENERATOR

- Check Radiator
- Check Lube Oil Level
- Check HSD Tank Level
- Check the Level of Distilled Water in the Batteries and Fill If Necessary
- Start the Generator Set for Few Minutes, and Then Switch Off
- Check rpm

YEALRY CHECK OF ELECTRICAL PANELS (PUMP A/C)

- Switch off the Mains
- Open Panel Covers

- Air Blow Housing
- Clean Contacts
- Close Panel
- Tighten Bolts and Nuts

YEARLY CHECK FOR PUMP HOUSE PANEL

- Switch Off the Panel
- Clean Outer Housing
- Check Fuses
- Air Blow Housing
- Tighten Loose Bolts and Nuts
- Clean Panel

YEARLY CHECK FOR POWER DISTRIBUTION BOARDS

- Switch Off Incoming
- Check Switch Mechanism
- Clean Switch and Panel
- Check Power Fuse and Breakers
- Check Loose Connections

DAILY CHECK FOR WATER SUPPLY PUMPS

- Switch Off Pump
- Check for Water Leakage
- Change the Gland Rope, If Necessary
- Check Base Bolts
- Check Gate Valve Operation
- Remove Air Lock through Air Pin
- Clean the Motor and Pump Assembly

MONTHLY CHECK FOR AIR HANDLING UNITS

- Clean Air Filters
- Clean with Air Blower
- Clean Outer Unit & the Space around the AHU'S
- Check Operating Valves

YEARLY CHECK FOR AIR HANDLING UNITS

- Close Inlet And Outlet Valves
- Remove AHU Side Covers
- Check Cooling Coil For Blockage
- Clean Micro-Vee Filters of O.T. AHU'S
- Clean Coil
- Reassemble Unit
- Check V-Belt
- Check Alignment Of Motor And Pulley
- Grease Motor Bearings
- Grease AHU Bearings

- Check Starter Points
- Paint The Unit

Monitoring Protocols

A. Effluent Water

B. Routine Water

C. Indoor Air Quality

D. Dialysis Water

A. Monitoring Protocol for Effluent Water

The sewerage treatment plant is under the annual maintenance contract with VisionLabs India Engineers under annual maintenance contract is responsible for monitoring of effluent water parameters.

Frequency: Monthly

Location: sewerage treatment plant, cellar 1.

Analysis: BIS method.

Vision Enviro Engineers sends the effluent water sample to the Vision Labs India for the effluent sample analysis. Vision Labs India is recognized by Ministry of Environment & Forests, Govt..of India.

Reporting:

Vision Labs India Test effluent water & sends copy of results to the Asst. Manager, Operations, Apollo Hospitals.

The following table the shows the various parameters being monitored every month through effluent water sample analysis:

EFFLUENT SAMPLE ANALYSIS

No.	Parameters	Units	G.S.R 919(E) On land irrig.
1	**pH**	**--**	**5.5 - 9.0**
2	**Electrical conductivity**	**micro mhos/cm**	**NS**
3	**Total dissolved solids**	**Mg/L**	**2100**
4	**Suspended solids**	**Mg/L**	**200**

5	**Chlorides**	**Mg/L**	**600**
6	**Sulphates**	**Mg/L**	**1000**
7	**COD**	**Mg O_2/L**	**-----**
8	**BOD_3 at 27^o C**	**Mg O_2/L**	**100**
9	**Oil and Grease**	**Mg/L**	**10**

Depending upon the test results if the findings show the abnormal readings the corrective measures will be taken by the company under contract in coordination with the hospital authorities.

B. Monitoring Protocol for Routine Water

Apollo Hospitals, Hyderabad gets the supply of routine water from Hyderabad Municipal Water Supply. The routine water is purified at the point of storage before its supply to the hospital.

The hospital has its own routine water monitoring protocols in place, which are developed and maintained by the Infection Control Committee & Department of Microbiology, Apollo Hospitals, Hyderabad.

Frequency: Monthly

Location: M.C.H. Water, Sump Filter Water, Overhead Tank Water, Visitor Canteen, Kitchen Tap, Staff Canteen.

Analysis: Most Probable Number Count

The samples from different locations of the hospital for routine water analysis are taken by the technicians from the Department of Microbiology.

Reporting:

The routine water tests results obtained are the confidential reports and will be checked by the Head of the Department of Microbiology.

A copy of routine water analysis reports will be sent to Medical Superintendent, Managing Director, Project Director, Maintenance In-Charge, and Chief Operating Officer & Hospital Administrator.

The following table shows the reporting format of the routine water analysis:

Source Of Sample	*M.C.H Water*	*Sump Filter Water*	*Overhead Tank Water*	*Visitor Canteen*	*Kitchen Tap*	*Staff Canteen*
S.No.						
Micro No.						
Presumptive Coli form Count						

If the routine water tests results show the abnormal presumptive coli form count the corrective measures will be suggested by the Department of Microbiology and implemented by Department of Maintenance again the tests results will be examined after the corrective measures have been taken.

C. Monitoring Protocol for Indoor Air Quality

The Apollo Hospital, Hyderabad has its in house In Door Air Quality monitoring protocols in place, which are developed and maintained by the Infection Control Committee & Department of Microbiology.

Frequency: Weekly.

Location: Operation Theatre Complex, Intensive Care Units, and Cardiac Cath lab.

Analysis: Air Sampling By Settle Plate Method.

Swabs will be taken from the floor, OT lights & walls of the aforementioned areas by the technicians from the Department of Microbiology.

Reporting: Reporting of Indoor Air Quality tests results obtained are the confidential reports and will be checked by the Head of the Department of Microbiology.

The final Indoor Air Quality test reports will be sent to Maintenance In-Charge, and Chief Operating Officer and Hospital Administrator.

STANDARD VALUES FOR INDOOR AIR QUALITY

Grades	MAJOR OT	MINOR OT	ICU'S
Satisfactory	**< 30 (+5)**	**<50 (+10)**	**<100 (+20)**
Acceptable limits	**30-5 (+5)**	**50-100 (+10)**	**100-200 (+20)**

Not satisfactory	**>50 (+5)**	**>100(+10)**	**>200 (+20)**

Infection Control Committee & Department of Microbiology follows the aforementioned in door air quality standards. If the indoor air quality test results are above the standard values .The infection control committee members along with microbiologists will perform the environmental surveillance and check for the growth of tetani.

If they found the presence of tetani in the indoor air .Then the fogging and bacillocid application will be recommended. Again the indoor air quality tests will be performed.

D. Monitoring Protocol for Dialysis Water

The Apollo Hospital, Hyderabad has its in house monitoring protocols in place to consistently monitor the quality of Dialysis water, which are developed and maintained by the Infection Control Committee & Department of Microbiology.

Frequency: Monthly

But if any fresh stock use from the distillation point or in case of infection the monitoring will be done based upon the requirements.

Location: Reverse osmosis water plant, Dialysis unit, Department of Nephrology.

Reverse osmosis water sample will be taken by the microbiologists. Raw water and Bi Carbonate water sample are also monitored based upon the inputs given by the doctor and senior technicians.

Method: Pour Plate Method.

Reporting: The tests results obtained will be checked by Head of the Department of Microbiology and reported to the H.O.D of Department of Nephrology.

If the uniform colony count obtained after optimum incubation exceeds the upper limit of 200 colony/ml. the dialysis water in use will be considered as contaminated.

If contamination is reported in the tests results, then the information will be brought to the notice of service engineer of the reverse osmosis plant (Fresinius). And then the reverse osmosis plant will be disinfected.

Log Book Format for Engineering Services

1. **Central gas supply system**
2. **Electrical sub - station**
3. **Central A/C plant**
4. **Water pump house**

2.0. CENTRAL GAS SUPPLY SYSTEM

2.1. Nitrous Oxide Supply

The log book contains the hourly information about the nitrous oxide supply under the following mentioned headings:

- Stock Cylinders:
- Empty Cylinders:
- Running Cylinders:
- Outlet Pressure:
- Left Bank Cylinder:
- Right Bank Cylinder:
- Line Pressure:
- Operator Signature:

2.1.2. Central Oxygen Supply

The log book contains the hourly information about the central oxygen supply under the following mentioned headings:

- Stock Cylinders:
- Empty Cylinders:
- Liquid Medical Oxygen Running Tank:
- Line Pressure P.S.I:
- Left Bank Cylinder:
- Right Bank Cylinder:
- Pressure Cylinder P.S.I:
- Line Pressure, Operator Signature:

2.3.

The log book contains the service record of vacuum compressor and air compressor under the following mentioned headings:

- Date
- Description
- Remarks
- Service engineer signature

3.0. ELECTRICAL SUB - STATION

3.1.1 Electrical Sub Station

The log book contains the hourly information about the High Tension /Low Tension supply for the three transformers under the following mentioned sub headings:

- High Tension Volt:
- High Tension Ampere:
- For Transformer -1 the L.T.V, and L.T.A Readings:
- Power Factor and Remarks:
- The daily consumption:
    - Kilo watt hour (K.W.H.R.):
    - Kilo volt ampere (K.V.A.H):
    - Maximum Demand (M.D.):
    - Power Factor (P.F):

3.2.

The log book contains the every day information about the diesel generator readings under the following headings:

- Date:
- Starting Time:
- Stopping Time:
- Total Time:
- Oil Pressure:
- Water Temperature:
- Oil:
- Temperature:
- Frequency:
- Volts:
- K.W.:
- Amps:
- K.L.H:
- R.P.M:
- Signature:
- Remarks:

3.3.

The log book contains the service record of diesel generator sets under the following mentioned headings:

- Date
- Description of work done
- Attended by
- Signature

4.0. CENTRAL A/C PLANT

4.1 Carrier Chiller

Log book contains the hourly details about the operation of the York Chiller A.C. Plant under the following sub headings:

- Time: 1- 24
- Plant – 1
    - Time
    - Suction Pressure
    - Oil Pressure
    - Discharge Pressure
    - Oil Level in Compressor
    - Amperes
- Condenser Pressure
    - Inlet Pressure
    - Out Let Pressure

- Chiller Pressure
    - Inlet Pressure
    - Outlet Pressure
- Chiller Temperature
    - Inlet Temperature
    - Out Let Temperature
- Chiller Pump: 1, 2,3
- Volts
- Signatures

5.0. Water Tanks

Log book contains the details about the supply of water to the following areas:

5.1. M.C.H. water supply

SAFETY MEASURES

1.0. Electrical work

2.0. Mechanical work

3.0. Civil work

4.0. Plumbing

5.0. Welding, Cutting, and Brazing

6.0. Painting

7.0. Scaffolding

8.0. Ladders

9.0. Precaution in case of fire

10.0. Diesel generator set

11.0. Gas plant

12.0. H.V.A.C

1.0. Safety Measures during Electrical Work

1.1. Following are the safety measures to be taken while performing the electrical work:

- Sufficient work space should be provided to permit safe operation of electrical equipment.
- Employees trained in first aid fundamentals including resuscitation involving emergency situations should assist the electrical operations.
- Personal protective equipment should be used by the employees during electrical operations.
- Protective helmets must be worn by the electrical workers at the job site.
- The outlet devices must be correctly matched with the load being served.
- The polarity of conductors should be correct.
- Each disconnecting means for motors and appliances, each service, feeder and branch circuit must be legibly marked to identify its purpose.
- The exposed live electrical parts (operating at 50 volts or more) must be guarded against accidental contact by approved cabinets or enclosures, by location, or by limiting access to qualified personnel.
- Unused openings in cabinets, boxes and fittings should be closed.
- All pull boxes, junction boxes and fittings provided with covers must be approved for the purpose

- The rooms or enclosures containing exposed live parts or conductors operating at over 600 volts, nominal, must be kept locked or under the observation of a qualified person at all times.
- All cabinets, cut out boxes, fittings, boxes, panel board enclosures, switches, circuit breakers and switchboards located in wet or damp locations should be enclosed in weather proof enclosures.

- The electrical wiring and equipment that is located in hazardous locations intrinsically safe, should be approved for the hazardous location, or safe for the hazardous location.
- When working on buried cable or a cable in manholes, the metallic sheath continuity should be maintained by bonding across the opening or by equivalent means.
- The exposed metal parts of cord- and plug-connected equipment (refrigerators, freezers and air conditioners) should be handled carefully.
- The flexible electrical cord and cable should not be used as a substitute for the fixed wiring of a structure.
- The electrical repairs must be made only by authorized and qualified personnel.
- The unused openings in breaker boxes should be covered with blanks.
- All employees who face a risk of electrical shock must be trained in safety related work practices
- The live parts, to which employees may be exposed, should be de-energized before employees work near them.
- The locks and tags should be placed on each disconnecting means used to de-energize circuits.
- If a lock cannot be applied, the disconnecting means should be tagged.

- Before reenergizing the equipment should be inspected by a qualified person to insure that it is safe to do so.
- Any employee exposed to hazards of reenergizing must be warned.
- If work is to be performed near overhead lines, the lines should be de-energized and grounded.
- The portable ladders should be made up of nonconductive side rails to ensure safety in case, if employees could contact exposed energized parts.
- The portable cord and plug connected equipment and extension cords should be inspected before use.

2.0. Safety Measures during Mechanical Work

2.1. Following are the safety measures to be taken while performing mechanical work:

- Employees should wear the helmets, gloves and non- skid shoes while performing the mechanical jobs.
- Fire extinguisher should be kept near the area of work
- The heavy weight loading and unloading of material and equipment should be done in presence of adequate staff and appropriate weight lifting mechanism.
- All the tools required for executing the mechanical job should be in place before the start of the job.
- Any mechanical work must be executed in presence of a qualified staff.

3.0. Safety Measures during Civil Work

3.1. Following are the safety measures to be taken while performing civil work:

- The worker should wear helmets during the civil work.
- Safety signage for caution should be displayed near the area under civil work.
- Signage of civil work in progress should be displayed near the civil work area.
- Employees should wear mask and gloves, while handling cement and building material.
- All the electrical cable connections should be disconnected or properly marked before starting the civil work.
- Fire extinguisher should always be kept near the work area.
- The work area should be covered with the plastic

4.0. Safety Measures during Plumbing

4.1. Following are the safety measures to be taken while performing plumbing work:

- The plumber should take the approval from the infection control committee before executing any plumbing work
- The plumber should communicate to the concerned areas about the plumbing work.
- Plumber should wear the personal protective equipments like, helmet, gloves and non-skid sole shoes.
- Before starting the plumbing work in any area the inlet valve should be closed.
- The work area should be checked for the presence of any open electrical wires.

5.0. Safety Measures during Welding, Cutting, And Brazing

5.1. Following are the safety measures to be taken while performing the welding cutting, and brazing work:

- All the fire hazards in the vicinity of welding or cutting should be removed or guarded.

- The used drums, barrels, tanks, or other containers which require welding should be thoroughly cleaned so that all flammable materials, or materials which may produce flammable or toxic vapors when heated, are not present before welding, cutting or other hot work is performed.
- The welder and any helpers or attendants should be provided with properly selected helmets, goggles, or face shields during any welding, cutting, or brazing operation.
- The confined spaces should be adequately ventilated to prevent the accumulation of toxic materials or oxygen deficiencies during welding or cutting operations.
- The first aid equipment should be available at all times during welding operations.
- The mechanical ventilation should be provided as required in welding or cutting areas.
- All the compressed gas cylinders should be legibly marked to indicate their content.
- The cylinders should be stored in the area where they will not be knocked over, damaged, or subject to tampering.
- The oxygen cylinders should be separated from fuel-gas cylinders or combustible materials by at least 20 feet or a non-combustible barrier at least 5 feet high.
- The cylinder valves should be closed when being moved.
- The cylinder valves should be closed when work is finished.
- The cylinder valves should be closed when cylinders are empty.
- The electrodes should be removed or electrode holders should be placed. So the electrodes cannot make electrical contact with employees when the holders are left unattended.
- The arc welders should be disconnected immediately at the end of the operation.
- Employees who are performing any type of welding, cutting or heating should be protected by suitable eye protective equipment.

- The proper (mechanical) ventilation should be provided in the welding area to remove fumes and smoke and keep the concentration within safe limits.

6.0. Safety Measures during Painting

6.1. Following are the safety measures to be taken while performing painting work:

- The mask should be worn by the employees doing painting work.
- The goggles should be worn by the employees involved in ceiling and spray painting.
- Painter should wear the other necessary personal protective equipment like, helmets.
- Gloves and non- skid sole shoes.
- The wet painting area should be clearly displayed.
- Fire extinguishers should be there near the area of painting.

7.0. Safety Measures during the Scaffolding

7.1. Following are the safety measures to be taken for scaffolding:

- The scaffolds should have standard guardrails on all open sides and ends of the platform.
- The guardrails and toe boards provided on all open sides/ends of scaffolds should be more than 10’ high.
- Scaffolds and their components should be capable of supporting at least four times the maximum intended load without failure.
- The scaffolds should be properly braced (plumb, square and rigid).
- The structurally damaged (broken, bent, excessively rusted, altered) scaffold frames/components should be removed from service.

8.0. Safety Measures for Ladders

8.1. Following are the safety measures to be taken for the ladders:

- **E**ach stepladder should have a metal spreader or locking device.
- The portable or fixed ladders used for access to an upper level should have side rails that extend at least 3' above the upper level.
- Ladders that are used where the employee or the ladder could come into contact with exposed energized parts should have nonconductive side rails.
- Ladders should be periodically inspected by a competent person.
- Portable ladders with structural defects should be marked as defective and withdrawn from service.
- All the ladders should be maintained in good condition.
- The ladders with defects should be marked as "Dangerous, Do Not Use" and removed from service
- All of the ladders should have non-slip bases.
- The maintenance workers using ladders should use the three-point rule? (Three-point rule is where two hands and one foot are touching the ladder or two feet and one hand, etc. at all times.)

9.0. Precautions In Case Of Fire

9.1. Following are the precautions to be taken in case of fire:

- Employee must immediately raise an alarm for fire.
- All the combustible material should be removed from the place of fire.
- The electrical supply should be cut off immediately
- People should not be allowed to enter the confined area.
- All employees should wear the personal protective equipment.
- If any civil work is going on near the area of fire should be stopped immediately.

10.0 Safety Measures at Diesel Generator Sets

10.1. Following are the safety measures to be taken while operating the diesel generator sets:

- Personal protective equipments should be used by the employees during diesel generator operations.
- Sand and fire extinguishers should be kept near the area of work.
- The DG set operator should wear the proper hearing protection aides.
- Any flammable material should not be kept near the diesel generators.

12.0. Safety Measures at Central Gas Supply Plant

12.1. Following are the safety measures to be taken at the central gas supply system:

- The compressed gas cylinders should be legibly marked for their gas contents.
- The compressed gas cylinders should be kept in an upright position and located where they will not be knocked over, damaged or subject to tampering.
- The oxygen cylinders should be separated from fuel-gas cylinders or combustible materials by at least 20’ or by a noncombustible barrier at least 5’ high having ½ hour fire resistance.
- The oxygen cylinders and fittings should be kept away from oil and grease.
- The valve protection caps should be present on the cylinders.
- The oxygen and fuel regulators should be proper working order.
- It should be ensured that cylinders, full or empty, shall never be used as rollers or Supports.
- Fire extinguisher should be kept while transferring of gases from one cylinder to another.

- Personal protective equipments should be worn by the employees involved in transferring of gases.

13.0. Safety measures for HV A.C

13.1. Following are the safety measures to be taken while handling the HV A.C.:

- Employees handling the HV A.C. should first inform the nearest sub – station.
- Clear instructions should be obtained before executing any work related to HV A.C.
- All the employees involved in HV A.C work should wear the appropriate personal protective equipments.
- Fire extinguishers should be kept near the area of work.
- All the mains supply should be disconnected before the execution of any work related to the HV A.C.
- The HV A.C. work should be performed under the supervision of the competent staff only.

CONTINGENCY PLAN

- **A/C Plant**
- **Electric Sub - Station**
- **Pump Room**
- **Water Supply**
- **Compressed Air**
- **Vacuum**

- **Medical Oxygen**
- **Nitrous Oxide**
- **Dry Nitrogen**
- **Carbon Di Oxide**

Contingency Plan for A/C Plant

Capacity

- Three chiller pumps each one of 10 HP
- Two compressors each of 100 TR cooling capacity

Consumption

- Two chiller pumps for 24 hours
- Three condenser pumps for 24 hours
- Two compressors each of 100 TR cooling capacity

The Following Table shows the reasons for Breakdown in A/C Plant and the Required Action to Be Taken:

S.No.	Reasons for Break Down	Action To Be Taken
1	Long intervals between oil change	The oil levels needs to be checked and oil should be changed at required intervals
2	Freon gas leakage through glands	The point of leakage should be repaired
3	Loose nuts and bolts due to high vibrations	The nuts and bolts should be tighten.
4	Cooling tower condensing problem	The Freon gas temperature should be controlled.
5	Fluctuations in the Freon gas temperature	The Freon gas temperature should be controlled.
6.	Bearing problem in cooling tower	Change the bearings.
7.	Sprinkler damage in cooling tower	Servicing or replacement of sprinklers.
8.	Motor coil damage	Motor re-winding

Supplier addresses and important no. in case of emergency:

Blue Star Air Control Engineer
Hymayatnagar,
Hyderabad.
Mobile:91-9959729194/9989335433

Back up Plan:

One chiller is maintained as a stand by facility to meet any type of unexpected failure or break down.

Contingency Plan for Electric Sub- Station

Capacity

- Total Incoming Supply: 950KVA
- Transformer Details:
- Transformer 1: 1500 K.V.A (ESSENAR)

- One Diesel Generator Sets with Capacity of: 725 KVA,
- The Diesel Storage Capacity of Diesel Generators:

  725 KVA: 1000 Litres. Storage capacity.

Consumption:

KWH – 709, KVAH – 115, KVARH – 723, M.D. – 49.32, P.F - 0.98.

The Following table shows the reasons for breakdown in electrical Sub - station and the required action to be taken:

	Reasons for break down	Action to be taken
Electrical sub station		
1	Fluctuation in the power supply from sub stations	Contact the sub stations or electrical control room
2	Bad whether	Contact the sub stations OR electrical control room
3	Thunder lightening	Contact the sub stations
4	Sparks due to loose connections	Contact the service engineer
5	Oil leakage	Contact the service engineer
Diesel generator sets		
1	Blocked filters	Change the filters
2	Increased noise levels	Check all the nuts and bolts and other parts
3	If more smoke is coming out	Check the engine

Supplier addresses and important no. in case of emergency:

APSEB	040 -23432047,
AE No.	9440813009
SE No	9440812826
ADE :	9440812990(Mr.Gandhi Naik)
Control Room	

Back up Plan

- The hospital gets the power supply from Secunderabad substation near Old MLA Quaters, incase of any power supply break down from any one of the sub-stations. The other sub station will supply the power and act as a stand by power supply source.
- If in case of major power break down both the sub-station power supply fails. Then the hospital has the stand by back up of diesel generator set which can run continuously for the period of 5 days and will comfortably meet the power demand of the hospital.
- The diesel generator of capacity 725 KVA consumes 1000 Litres of diesel during the run time of 24 hours. Hence the hospital has its own petrol pump, to meet the emergency demand of the diesel during such unexpected power failure instances.
- The emergency telephone no. of the sub – station, divisional electrical engineer, the company service engineers for the transformers and diesel generator sets are provided to the staff of the maintenance department. Hence at any given point of time the expert help can be reached in a minimum response time.

Contingency Plan for the Pump Room

Motor Pumps Capacity

- One motor pump: 5 horse power.(Borewell-1)
- One motor pump: 2 horse power.(Lifting-2)

- Fire safety motor pump: 75 horse power
- Fire safety motor pump: 10 horse power
- One Motor pump : 12.5 horse pump

Motor Pumps for Daily Use: 2 motor pumps.

Stand by Motor Pumps: 1 motor pumps.

The Following Table shows the reasons for Breakdown in Pump Room and the Required Action to Be Taken:

S.no.	Reasons for breakdown	Action to be taken
1	Motor coil damage	Contact the service engineer for rewinding of coil.
2	Loose nuts and bolts	Tighten all the loose nuts and bolts.

Supplier address and phone number in case of emergency:

- Indira Motor Winding

  Phone No.: 27616354

Contingency Plan for the Water Supply

- Total storage capacity: 1,50,000 litres.
- Head tank storage capacity:1,00,000 liters.

- Other storage tanks:

  Sump: (Ground) : 70,000 Litres.

- There is one bore well, which supply the raw water during the year
- Water consumption per day: 1,50,000 liters.
- Reserve water storage for fire fighting: 75,000 liters.

Problem: the severe shortage of water during summer.

Action to be taken: the private water suppliers provide water in case of shortage during summer.

Supplier phone no.:

MANJEERA WATER SUPPLY	
Surender	9908083802
MADINA WATER SUPPLIERS	
Khan	9246176903

Contingency Plan for the Compressed Air

- Number of air compressor: 2

- Capacity of each air compressor: 7 kg/cm^2.
- Storage tank capacity: 10.5 kg.
- Storage tank pressure: 4.5 – 6 kg /cm^2.
- Line pressure: 4 kg /cm^2.
- Running time for each air compressor: 12 hours.
- When one air compressor is in use for 12 hours. The other air compressor is kept as a stand by.

The Following Table Shows the reason for Breakdown of air compressor and the Required Action to Be Taken:

S.no.	*Reason for breakdown*	*Action to be taken*
1	V- belt cracks or cuts	Change the V- belt.
2	Suction and delivery spring problem.	Change the suction and delivery spring
3	Blocked water flow	The passage to be cleaned
4.	Low oil level	Fill the oil and maintain the optimum oil level
5.	Loose motor bearing	Change the motor bearings
6.	Cracking of the shaft	Shaft to be changed
7.	Problem in the air dryer	Change the aluminium activate

Following table shows the location and the total number of outlets of compressed air in the hospital :

APOLLO HOSPITALS SECUNDERABAD

S.No.	Location	No. of Compressed Air Outlets
1	GICU	17
2	CICU	6
3	CT Post ICU	06
4	Operation Theatre Complex	
5	OT1	3
6	OT2	3
7	OT3	3
8	OT4	3
9	OT 5	3
10	Cath Lab	02
11	Emergency	10

Important numbers in case of emergency:

Rama Krishna: 99494744588

Contingency Plan for the Vacuum

- Number of vacuum compressor: 2
- Capacity of vacuum compressor: 7 kg/cm^2.
- Storage tank capacity: 1000 liters.
- Storage tank pressure: 400 – 600 mm Hg.
- Line pressure: 4 kg /cm^2.
- Running time for each vacuum compressor: 12 hours.
- When one vacuum compressor is in use for 12 hours. The other vacuum compressor is kept as a stand by.

Following table shows the reasons for breakdown in vacuum compressor and the required action to be taken:

S.no.	Reasons for breakdown	Action to be taken
1	Loose piston rings and oil leakage	Change the piston rings
2	Damage of valve plates	Change the valve plates
3	Thickness in the oil	Oil needs to be changed
4.	Blocked air filter	Air filter needs to be changed.

Following table shows the location and the total number of outlets of vacuum in the hospital:

S.No.	*Location*	*Vacuum*
1	GICU	17
3	CICU	14
4	CT Post ICU	06
5	Operation Theatre Complex	
6	OT1	2
7	OT2	2
8	OT3	2
9	OT4	2
10	2nd floor ,	30
11	2nd floor,	24
12	3th floor	28
13	4th floor	
14	CT-Scan	01
15	MRI	01
16	Dialysis	09
17	Cath Lab	02
18	Emergency	09
19	Endoscopy	02
20	EMG	01

Important numbers in case of emergency: Rama Krishna: 99494744588

Contingency Plan for Medical Oxygen

Oxygen Bulk Cylinder

- Each oxygen bulk cylinder storage capacity: 7.1m^3
- Weekly consumption: 280 cylinders.
- Weekly stock: 100 cylinders.

Oxygen B Type Cylinders

- Each oxygen B type cylinder storage capacity: 1.73m^3
- Weekly consumption: 70 cylinders.
- Weekly stock: 100 cylinders.

Oxygen A Type Cylinders:

- Each oxygen A type cylinder storage capacity: 0.73m^3
- Monthly consumption: 10 cylinders.
- Monthly stock: 15 cylinders.

The central gas supply system has two banks for the uninterrupted supply of medical oxygen in case of emergency: the left bank and the right bank.

- The left bank has ten medical oxygen bulk cylinders.
- The right bank has ten medical oxygen bulk cylinders.
- Emergency has 2 medical oxygen bulk cylinders
- Medical oxygen gas manifold (delivery pressure): 40 – 60 P.S.I (pounds per square inch).
- Line pressure: 4 kg /cm^2
- Medical oxygen gas manifold capacity: 0- 2000 P.S.I. (pounds per square inch).

Following table shows the reasons for breakdown in B type medical oxygen cylinder and the required action to be taken:

S.no.	Reasons for breakdown	Action to be taken
1	Spring problem in the outlet valve	Change the spring
2	Regulator leakage	Change the regulator
3	Blockage in the washer of central suction unit	Clean the washer Or if require change the washer.
4.	Break in flow meter glass	Change the glass
5.	Flow meter handle leakage	Change the handle.

Following table shows the location and the total number of outlets of medical oxygen in the hospital:

S.No.	*Location*	*Medical Oxygen Outlet*
1	GICU	34
2	CICU	12
3	CT Post ICU	12
4	Operation Theatre Complex	
5	OT1	2
6	OT2	2
7	OT3	2
8	OT4	2
9	OT 5	2
10	$^{2\ th}$ floor,	48
11	3^{th} floor	28
12	^{2th} floor general ward	60
13	CT-Scan	01
14	MRI	01
15	Dialysis	18
16	Cath Lab	02
17	Emergency	18
18	Endoscopy	02
19	EMG	01
20		

Supplier's addresses and important telephone Nos.:

B Type Oxygen Cylinder,

Oxygen Bulk Cylinder and Oxygen 'A' Type Cylinders:

BOC, Sanathnagar, Hyderabad

Ph:040-23814403, Hari Krishna: 9849490040

Contingency Plan for Nitrous Oxide

Nitrous Oxide Bulk Cylinder:

- Nitrous oxide bulk cylinder storage capacity: 17000 liters.
- Weekly storage: 2 cylinders.
- Weekly consumption: 2 cylinders.

Nitrous Oxide A Type Cylinder:

- Nitrous oxide A type cylinder storage capacity: 1850 liters.
- Weekly storage: 15 cylinders.
- Weekly consumption: 10 cylinders.

The central gas supply system has two banks for the uninterrupted supply of Nitrous oxide:

- The left bank has two bulk nitrous oxide cylinders.
- The right bank has two bulk nitrous oxide cylinders.
- Nearly two nitrous oxide bulk cylinders are kept as a stand by.
- Nitrous oxide gas manifold capacity: 0 - 65 kg/cm^2.
- Line pressure: 4 kg /cm^2

Following table shows the location and the total number of outlets of medical Nitrous oxide in the hospital:

S.No.	Location	Nitrous Oxide Outlets
	Operation Theatre Complex	
1	OT1	1
2	OT2	1
3	OT3	1
4	OT4	1
5	OT5	1
6	Cathlab	1
	TOTAL	**06**

Supplier's addresses and important telephone Nos:

BOC, Sanathnagar, Hyderabad

Ph:040-23814403, Hari Krishna: 9849490040

Contingency Plan for Carbon Di Oxide

Carbon Di Oxide Big Cylinder:

- Carbon di oxide big cylinder storage capacity: 22 kg.
- Per day stock: Four big cylinders.
- Per day running cylinders: Six big cylinders.

The carbon di oxide is used in operation theatre and laboratory services. The cylinders are sent as a whole to the user departments.

Supplier's address and important telephone No: Dry Ice Depot

Phone No.: 24743461.

Standard Operating Procedures

1. **A/C Plant**
2. **Diesel Generator Set**
3. **High Tension Power Panel**
4. **Low Tension Power Panel**
5. **Air Compressor**
6. **Vacuum Compressor**
7. **Pump Room**
8. **Transfer Of Fuel**

1.0. Standard Operating Procedure for A/C Plant

1.1. The standard operating procedure for operating the A/C plant is as follows:

- Switch on the four chiller pumps with inlet pressure of 4.2 Kg/ cm^2 and out let pressure of 4.0 Kg/ cm^2
- Start the compressor at the following parameters:
  - Suction pressure: 52 – 70 Kg / cm^2
  - Oil pressure: 120 Lb/in^2.
  - Discharge pressure: 182 – 240 Lb / in^2.
  - The oil level should be half.
  - Ampere supply depending upon the load between 140 – 170 Amps.

1.2. The standard operating procedure for shutting down of A/C Plant is as follows :

- First switch off the compressor.
- Then switch off the cooling tower.
- Switch off the condenser pumps.
- After one hour switch off the chiller pumps.

1.3. Daily maintenance protocol of central A/C plant:

Following are the important steps, which need to be performed for the effective daily maintenance of the central A/C plant:

- Check leak with bathing soap solution.
- Check oil level through glass eye.
- Check gas and oil pressure from the gauge readings.
- Check chiller inlet and outlet pressure and temperature.
- Check condenser inlet and outlet pressure and temperature.
- Check all operating valves position
- Check solenoid valve functioning
- Check operational noise level.

3.0. Standard Operating Procedure for the Diesel Generator Set

3.1. The standard operating procedures for the diesel generator sets are as follows:

- Incase of any power failure or break down the 725 KVA diesel generator will start automatically and the power will be supplied through the emergency panel.
- Automatically the power will be supplied to the emergency areas of the hospital.

3.2. Daily maintenance protocol of Electrical Generator:

Following are the important steps, which need to be performed for the effective daily preventive maintenance of the Electrical Generator:

- Check radiator water level
- Check lube oil level
- Check HSD tank level
- Check the level of distilled water in the batteries if necessary
- Start the generator set for few minutes and then switch off
- Check the revolution permanent
- Check temperature and pressure of oil and water

3.3. Daily maintenance protocol of Batteries:

Following are the important steps, which need to be performed for the effective daily preventive maintenance of the batteries:

- Check level of distilled water in the batteries
- Check the connection between battery terminals and generator sets
- Clean the batteries for distilled water spillage if any.

4.0. Standard Operating Procedure for the High Tension Panel

4.1. Following are the standard operating procedure for the high tension Panel:

- The high-tension panel has 11 KV incoming power supply with the facility of minimum oil circuit breaker.
- Incase of power failure, short circuit, overload trip, any circuit break down, the high tension panel give the following alarms: bucholze alarm, winding temperature alarm, oil temperature alarm, bucholze trip, winding temperature trip, oil temperature trip, minimum oil circuit trip, oil level ckt, over current trip, L.V. TCS trip, H.V. TCS trip, HV breaker trip ,oil temperature high alarm, trip circuit faulty ,low oil level, winding temperature high alarm , feeder breaker trip, line over voltage trip alarm , trip circuit faulty (LV breaker), trip circuit faulty (HV breaker),incoming feeder breaker trip ,trip circuit faulty.
- The electrical supervisor will then press the accept alarm to stop the alarm (which acknowledge that the person in charge is aware about the problem).

- The electrical supervisor rectifies the problem as indicated by the alarm.
- The electrical supervisor reset the tripped relay and presses the reset button on the HT panel and close the remote switch.
- Then the power supply gets back to the normal through the high tension panel for each of the three transformers.

5.0. Standard Operating Procedure for the Low Tension Panel

5.1. Following are the standard operating procedure for the low-tension panel:

- The low-tension panel has 440 volts of incoming supply and the facility of air circuit breaker.
- If power failure or break down problem occur. The low-tension panel air circuit breaker gets trip down.
- The low-tension panel indicates the problem with the red alarm indicator, which shows that the air circuit breaker is on.
- The electrical supervisor will push on the button for relay system.
- The low-tension panel starts working for the respective transformer.

6.0. Standard Operating Procedure for the Air Compressor

6.1. Following are the standard operating procedure for the Air Compressor:

- First the operator will check which air compressor is running and which air compressor is kept as a standby.
- Operator will switch off the running air compressor and switch on the standby air compressor.
- Operator will check the proper functioning of the standby air compressor.
- Operator will switch off the standby air compressor and switch on the running air compressor.
- The operator will check the oil level, noise levels, and belts of the running air compressor.

- Operator will drain the water every 2-3 hours from the air compressor.

6.2. Daily maintenance protocol for Air Dryer:

Following are the important steps, which need to be performed for the effective daily preventive maintenance of the air dryer:

- Drain water from compressed air storage tank
- Check the solenoid valve
- Check the timer setting
- Check the inlet and outlet valves

7.0. Standard Operating Procedure for the Vacuum Compressor

7.1. Following are the standard operating procedure for the vacuum Compressor:

- First the operator will check which vacuum compressor is running and which vacuum compressor is kept as a standby.
- Operator will switch off the running vacuum compressor and will switch on the standby vacuum compressor.
- Operator will check the proper functioning of the standby vacuum compressor.
- Operator will switch off the standby vacuum compressor and switch on the running vacuum compressor.

- The operator will check the oil level, noise levels, and belts of the running air compressor.

8.0. Standard Operating Procedure of Pump Room for Water Supply

8.1. Following are the standard operating procedure of pump room for the supply of MCH water:

- The water supplied by the municipal corporation to be filled in the water tank.
- Switch on the motor pumps.
- The motor pump will pump the water to the main head tank.

8.2. Following are the standard operating procedure of pump room for the supply of boring water:

- Start the bore well.
- Pump the water from the bore well to the raw water tank.
- Switch on the 3 HP motor to pump the water to the softener tank.
- Pump the water from the softener tank to the filter tank.
- Pump the water from the filter tank to the main head tank.

8.3. Daily maintenance protocol for the water supply pumps:

Following are the important steps, which need to be performed for the effective daily preventive maintenance of the water supply pumps:

- Switch off pump.
- Check for water leakage.
- Check the gland rope if necessary.
- Check base bolts.
- Check gate valve operation.
- Remove air lock through air pin.
- Clean the motor and pump assembly.

9.0. Standard Operating Procedure for the Transfer of Fuel

9.1. Following are the standard operating procedures for the transfer of fuel:

- The inter office memo from maintenance department sent to purchase department for the 600 liters of high-speed diesel at a time.

- The purchase department provides three coupons to get 600 liters of high-speed diesel (each coupon for 400 liters of high speed diesel).
- The boiler plant operator calls the motor trolley for the supply of high-speed diesel.

FACILITY MANAGEMENT DOCUMENT

PART- IV

MASTER FLOOR PLAN

Apollo Hospitals, Secunderabad

1.0. Master Floor Plan of Main Hospital Building

The main hospital has ground floor, 1st floor, 2nd floor, 3rd floor, 4th floor, 5th floor, 6th floor CellarB1 and Cellar B2.

1.1 Following are the built up areas of the hospital building:

1.1.1. Ground Floor

- The CT scan unit built up area is 326 sq ft.
- The x-ray unit total built up area is 285 sq. ft
- The MRI unit total built up area is 658 sq. ft
- Emergency has the built up area of 1313 sq. ft.
- EEG/EEG unit has the built up area of 132 sq ft.
- The Ultra Sonography unit built up area is 113 sq. ft area
- PFT has the built up area of 130 sq. ft.
- TMT has the built up area of 237.50 sq ft.
- ECHO has the built up area of 113 sq ft
- Doctors Consultation Room has built up area of 125 sq ft
- Sample collection has a built up area of 165 sq ft
- Treatment Room has built up area of 140 sq ft.
- OP Pharmacy has built up area of 328 sq ft.
- Toilets have a built up area of 185 sq ft

1.1.2. First Floor

- The first floor has 18 patient rooms with a total built up area is 2600 sq. ft
- The nephrology unit total built up area is 1050 sq. ft
- The Endoscopy unit has total built up area is 438.75 sq ft.
- MHC Lounge total built up area is 226 sq ft.

- Doctor's Lounge built up area is 154 sq ft
- Electrical room built up area is 112 sq ft
- Quality Department built up area is 75 sq ft
- Toilets built up area is 220 sq ft.

1.1.3. Second Floor

- The second floor has 4 Operation Theatre with built up area 1405 sq ft
- Instrument Wash area built up area is 115 sq ft
- Cathlab Built up area is 522 sq ft
- Sterile store has built up area is 124 sq ft.
- OT Store has built area of 166 sq ft.
- OT Pharmacy has built up area of 124 sq ft.
- Patient Preparation Room has built up area of 135 sq ft.
- CT Post has built up area of 767 sq ft.
- OT Recovery has built up area of 920 sq ft.
- CICU has built up area of 1945 sq ft
- Doctor's Lounge has built up area of 153 sq ft
- Male Doctor's Change Room has built up area of 80 sq ft
- Female Doctor's Change Room has built up area of 83 sq ft
- Male Technician Change Room has built up area of 80 sq ft
- Female Nurse Change Room has Built up area of 80 sq ft

1.1.4. Third Floor

- The third floor has 7 sharing rooms with built up area 2730 sq ft

- Doctor's Room has built up area of 100 sq ft
- SICU has built up area of 1151 sq ft
- MICU has Built up area of 3917 sq ft
- Electrical Panel has built up area of 70 sq ft
- Housekeeping Room has 295 sq ft built up area

1.1.5. Fourth Floor

- The housekeeping room has the total built up area of 184.50 sq. ft
- Nurse Change Room has built up area of 70 sq ft
- The floor has 16 sharing Rooms with built up area of 3395 sq ft
- Store Room Nursing station has built up area of 83 sq ft
- Doctor's Room has built up area of 130 sq ft
- Store room has built up area of 70 sq ft.

1.1.6. Fifth Floor

- The MRD and Central Wash Area has a built up area of 288 sq ft.
- The floor has 13 single rooms and 6 premium rooms with built up area of 5900 sq ft
- Doctor's Room has built up area of 130 sq ft
- The store room has a built up area of 80 sq ft

1.1.7. Sixth Floor

- Administrator office has a built up area of 207 sq ft
- The general Ward has built up area of 3852 sq ft

- CSSD has built up area of sq ft 334 sq ft
- The kitchen has built up area of 603 sq ft
- The dining Hall has built up area of 1155 sq ft
- Conference Hall has built up area of 353 sq ft

1.1.8. Basement

- The Gas plant has built up area of 505 sq ft
- The Electrical panel and UPS rooms have built up area of 1160 sq ft
- The CCTV room has built up area of 58 sq ft
- IP Pharmacy has built up area of 357 sq ft
- Laboratory Services has built up area of 670 sq ft
- Physiotherapy has built up area of 293 sq ft
- Stores Department has built up area 555 sq ft
- Billing has 70 sq ft.
- Typing pool has 40 sq ft.
- Blood bank has 1100 sq ft.

1.2. Corridor Floor Plan of Main Hospital

1.2.1. Following are the built up area of the main hospital building corridors:

- The main hospital lobby has total built up area is 7020 sq. ft
- The ICU waiting lounge has the total built up area of 1000 sq. ft
- The corridor leading to N.I.C.U. and S.I.C.U. has the total built up area of 360 sq. ft
- The corridor near the MRI unit has the total built up area of 500 sq. ft
- The corridor of the Radiology department has the total built up area of 1000 sq. ft
- The corridor leading towards the EEG unit has the total built up area of 175 sq. ft
- Lifts including the electrical room and machine room has the total built up area of 9000 sq. ft
- The super deluxe corridor has the total built up area of 975 sq. ft
- All the main corridors of (doctor consultation rooms + Ground floor + patient rooms on first floor, second floor, third floor) has the total built up area of 20356 sq. ft.
- Upper basement corridor (including medical records department, blood bank, and laboratory corridor) has the total built up area of 960 sq. ft
- Lower basement corridor has the total built up area of 780 sq. ft